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July 19, 2002

Cheri Davis
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: East Altamont Energy Center
01-AFC-04

Draft Consensus Air Quality Mitigation Plan

Dear Ms. Davis:

As requested during the CEC's July 9, 2002 workshop, we are providing for review and comment a draft consensus air quality mitigation plan for the East Altamont Energy Center (EAEC). This draft air quality mitigation plan reflects the input that EAEC received from the staffs of the CEC and the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). No other suggestions for air quality mitigation measures have been received from other parties or members of the public as of today.

The draft air quality mitigation plan contains several elements that were specifically requested by the CEC staff, CEC project manager, or CEC project counsel at the last workshop. These elements include the following:

- The identification of a menu of potential air quality mitigation measures.
- For each identified measure, a general description as to how it would reduce emissions. As requested by the CEC project manager and project counsel, both the CEC staff and EAEC estimates of emission benefits are presented for each CEC-proposed mitigation measure, with an explanation of the differences between the approaches. Also as requested by the CEC project manager and project counsel, the summary of emission benefits is presented based on EAEC's emission reduction estimates.

- For each identified measure, an estimate of potential emission reductions achievable.
- For each identified measure, an estimate of the cost and cost/effectiveness of the measure.
- A summary of all of the measures, including a potential estimate of their costs, and the potential universe of reductions which could be achieved within the project vicinity, and a comparison of these emission estimates with the emissions associated with both the EAEC project and the Tesla Power project.

Since our objective was to prepare a draft consensus air quality mitigation plan, the document includes measures and/or assumptions that were presented to EAEC by others, but which EAEC might not otherwise propose or support. To the extent possible, we attempted to present data, assumptions and calculations that we believed all parties might find acceptable, while still being responsive to the requests made of us at the July 9th workshop.

In addition to the draft consensus air quality mitigation plan, and as discussed at the staff's July 9th workshop, we are enclosing a proposed condition of certification to implement the air quality mitigation program. This condition has been loosely patterned after the condition adopted by the Commission for the Tracy Peaker Project.

The attached draft consensus air quality mitigation plan is predicated on the assumption that EAEC and the SJVUAPCD will reach an agreement regarding the payment of a mitigation fee in an amount of $960,000 or more to fund this program. It is EAEC's understanding that the SJVUAPCD's agreement to participate in and administer the mitigation program is conditional upon such an agreement being signed by both parties prior to project licensing. In fact, we anticipate reaching a final agreement with the SJVUAPCD well in advance of project licensing.

We look forward to continuing our discussions with the CEC Staff on this issue.

Sincerely,

Gary Rubenstein

Encl

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Air Quality Mitigation Plan
for the
East Altamont Energy Center
July 19, 2002 (draft)

This air quality mitigation plan describes potential emission reductions that may be used to mitigate ozone and PM_{10} precursor emissions from the East Altamont Energy Center (EAEC) project. The assessment document describes the sources that may be used for mitigation, the quantities of emissions reductions potentially available, the estimated cost-effectiveness of the potential mitigation measure, and the past success of this type of measure in the program area.

The final mitigation measures to be implemented will be selected from the candidate measures in this plan by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), based on the cost-effectiveness of the measures and on the SJVUAPCD staff's experience with their success. The SJVUAPCD will make every effort to ensure that the effectiveness of measures is greatest within the EAEC project area in particular, and in the Northern Region of the SJVUAPCD. However, given the regional nature of the ozone and PM_{10} air quality problems faced in the SJVUAPCD, mitigation measures in other parts of the San Joaquin Valley Air Basin may be pursued if there are not sufficient cost-effective reductions available within the Northern Region.

Sources to be Used for Mitigation

The mitigation funds to be provided to the SJVUAPCD by EAEC, LLC will be used to fund any of a number of potential mitigation measures, as follows:

- Natural gas-fueled transit buses
- Natural gas refueling facility
- Natural gas school buses
- Solar panels at Mountain House School
- Renovation of Mountain House School parking lot
- Ultra-low sulfur fuel for construction equipment
- Wood stove replacement
- Fireplace retrofit
- Heavy-duty engine retrofit/replacements
- Agricultural engine replacements

Table 1 summarizes the measures, their cost/effectiveness, and potential emission reductions. While the actual emission reductions will depend on the expenditures made by the SJVUAPCD for each individual measure, the objective of this mitigation plan is to ensure that sufficient emission reductions are achieved to mitigate any remaining significant air quality impacts associated with EAEC.

A more detailed description of each program is provided below. Attached tables provide further details regarding the calculation of costs and emission benefits expected for each measure.

Table 1

East Altamont Energy Center
Air Quality Mitigation Measures

Summary of Mitigation Measures

Measure	Description	Cost/Effectiveness ($/ton) Ozone Precursors	Cost/Effectiveness ($/ton) PM10 Precursors	Potential Reductions (tons/year) VOC	NOx	SOx	PM10	Comment
CEC 1	Natural gas transit buses	$ 102,091	$ 99,760	5.7	2.2	0.0	0.1	Estimate for 4 transit buses
CEC 2	Natural gas refueling facility	NA	NA	0.0	0.0	0.0	0.0	No benefits estimated
CEC 3&4	School bus replacements	$ 289,844	$ 279,353	0.1	1.1	0.0	0.0	Estimate for 4 school buses
CEC 5	Solar panels	NA	NA	0.0	0.0	0.0	0.0	No benefits estimated
CEC 6	School parking lot	NA	NA	0.0	0.0	0.0	0.0	No benefits estimated
CEC 7	UltraLow S Diesel for MH construction	NA	$ 45,765	0.0	0.0	1.9	0.0	Benefits for low S fuel only
CEC 8	Wood stove replacement	$ 6,045	$ 3,872	39.7	1.6	0.3	22.9	Estimate for 500 units
EAEC 1	Fireplace inserts	$ 8,643	$ 7,508	17.2	0.2	0.0	2.6	Estimate for 500 units
SJVUAPCD 1	Ag engine replacements	$ 17,165	$ 13,717	234.1	1085.7	0.0	331.8	Estimate for Northern Region engines
SJVUAPCD 2	Other heavy-duty engine replacements	$ 20,867	$ 19,880	0.0	31561.6	370.8	1372.4	Estimate for Northern Region engines
	Total, All Measures			296.8	32652.3	373.0	1729.9	
	EAEC Project Emissions			73.7	263.0	21.3	148.0	PDOC Table 8
	EAEC ERCs Provided			84.8	302.5	442.0	0.7	PDOC Table 8
	Tesla Project Emissions			60.4	249.9		196.1	
	Tesla ERCs Provided			105.4	251.5		196.1	

Natural gas-fueled transit buses

The CEC staff has proposed providing natural gas-fueled transit buses to the City of Tracy Regional Transit District. These buses would be used to transport passengers during the morning and evening rush hours from the Tracy and Mountain House areas to the BART station in Dublin/Pleasanton. Emissions would be reduced by substituting natural gas bus emissions for individual automobile emissions. CEC staff proposes direct funding of the new transit buses. An alternative would be to work within the SJVUAPCD's existing Heavy-Duty Engine Emission Reduction Incentive Program to provide incentives for the purchase of natural gas-fueled transit buses as an alternative to conventional Diesel technology.

Natural gas refueling facility

Under this program proposed by the CEC staff, mitigation payments would fund the construction of a natural gas refueling station to provide fueling infrastructure for natural gas buses. This could be implemented under the existing Carl Moyer Fuel Infrastructure Demonstration Program. This program is administered jointly by the CEC and the SJVUAPCD. No specific emission benefits were identified by the CEC staff for this measure.

Lower emitting school buses

The CEC staff has proposed providing natural gas-fueled school buses to the Mountain House School District to replace the existing Diesel buses currently used to transport students to and from the school. This measure would include ongoing funding to provide replacement buses after 15 years of service. An alternative would be the replacement of older, existing Diesel buses with newer, lower-emitting Diesel buses. The emission reductions associated with this measure would result from the difference between the

emissions from the Diesel buses currently in use and those from the new buses. The CEC staff has proposed full funding of the new buses. An alternative approach would be to use the existing lower-emitting school bus program that is administered jointly by the CEC and the local air district. Under this existing program, the school district would pay 25% of the cost of the new buses, up to $25,000, while the remainder of the cost would be funded from the EAEC mitigation fee payment.

Solar panels at Mountain House School

Under this mitigation measure, mitigation payments would fund the installation of solar panels on the roof of Mountain House School. The SJVUAPCD has no existing programs through which to fund this measure. The CEC staff has not estimated any emission reductions associated with this measure, although it is assumed that there would be some benefit associated with the marginal reductions in electric power generation requirements.

Renovation of Mountain House School parking lot

The CEC staff has proposed funding that would be used either to renovate the Mountain House School parking lot to ease traffic congestion during school drop-off and pickup hours or to subsidize fees charged to parents for use of the school bus system. This funding would be paid to the school district, as the SJVUAPCD has no programs through which to fund such a project. The CEC staff has not estimated any emission reductions associated with this measure.

Ultra-low sulfur fuel for construction equipment

This CEC-proposed measure would require funding to build an ultra-low sulfur Diesel refueling station to serve construction equipment at the new Mountain House community. An alternative would be the use of mitigation funds to subsidize the incremental cost of using ultra-low sulfur Diesel fuel to be used in construction equipment at Mountain House.

Wood stove replacement

Under this program, mitigation fee payments would provide funding to subsidize the cost of replacement of existing conventional (uncertified) wood stoves with newer, EPA Phase II-certified units or with natural gas-fueled stoves. A woodstove replacement program is currently being implemented in the Bay Area and such a program could be used as a model for a woodstove replacement program in the project area. Some emission reductions can be gained by replacing uncertified woodstoves with EPA-certified units; however, greater reductions can be achieved by replacing these woodburning stoves with natural gas-fueled units. This program would be administered by the SJVUAPCD.

Fireplace Retrofit

Under this program, mitigation fee payments would subsidize the cost of retrofitting existing conventional (uncertified) wood-burning fireplaces with natural gas inserts. A fireplace retrofit program is currently being implemented in the Bay Area and this

program could be used as a model for retrofitting fireplaces in the project area. This program would be administered by the SJVUAPCD.

Agricultural engine replacements

This mitigation measure would provide funding to the SJVUAPCD to achieve further reductions under the existing agricultural pump engine program. Under this existing program, the SJVUAPCD provides funding assistance to rebuild or replace existing agricultural engines in the San Joaquin Valley to reduce emissions from this source. This existing program includes established criteria for awarding funding and for tracking pump operation to ensure that the goals of the program are being met.

Heavy-duty engine retrofit/replacements

This mitigation measure would provide funding to the SJVUAPCD to achieve further reductions under the existing heavy-duty engine retrofit/replacement program. Under this existing program, the SJVUAPCD provides funding incentives to retrofit existing engines or replace them with cleaner burning engines. This existing program has been operated successfully by the SJVUAPCD and includes established criteria for awarding funds and procedures for tracking vehicle use to ensure that the goals of the program are being achieved.

Funding

EAEC, LLC has committed a total of $*[1] to be used by the SJVUAPCD to fund ozone and PM_{10} precursor mitigation measures in the project area. Specific determinations regarding allocations of the funds will be made by the SJVUAPCD based on the relative cost-effectiveness of the measures and the SJVUAPCD's experience with the relative success and effectiveness of the various measures.

Potential Emissions Reductions

Potential emissions reductions from each mitigation measure have been evaluated using emission factors, inventory and survey data, and information and assumptions provided by the CEC staff and SJVUAPCD. Potential emissions reductions per unit of mitigation, potential emissions from the source category as a whole and cost-effectiveness data are summarized below for each measure. Detailed emissions calculations and inventory data are provided in the attached tables.

Natural gas-fueled transit buses

Potential emissions reductions from this measure were calculated assuming that one 48-passenger transit bus could make 8 round trips per day from nearby communities to the BART station; 4 of these trips would be during rush hours. Emissions benefits were calculated as the difference between the automobile trips reduced and the emissions from the new transit buses. The potential emissions reductions per bus are compared with the

[1] Note: The final amount of the mitigation fee payment has not yet been established; however, it will be an amount not less than $960,000.

total emissions from automobile travel in the northern San Joaquin Valley (San Joaquin, Stanislaus and Merced counties) in the following table:

Pollutant	Potential Emissions Reduction per transit bus		CY2002 Automobile Emissions in Northern SJV tpy
	lb/yr	tpy	
VOC	2,837	1.42	9,866
CO	27,137	13.57	98,882
NOx	1,081	0.54	8,884
SOx	18	0.01	51
PM_{10}	73	0.04	310

The cost-effectiveness of this measure is estimated at $102,091/ton of ozone precursors and $99,760/ton of PM_{10} precursors. No objective assessments of the potential success of such a measure are available as the applicant is not aware of such a program currently being operated by the City of Tracy.

Natural gas refueling facility

No emissions reductions are directly associated with this mitigation measure, and no cost-effectiveness can be calculated.

Natural gas-fueled school buses

Potential emissions reductions from this mitigation measure were based on the assumption that a school bus in the Mountain House district travels 60 miles per day, 200 days per year. Current bus emission factors were estimated based on California Air Resources Board emission factor models; emissions from the replacement buses were calculated assuming that the school district would select clean Diesel buses, rather than natural gas-fueled buses, as replacements to minimize disruptions to existing fueling and maintenance practices.

The potential emissions reductions per bus are compared with the total emissions from school buses in the northern San Joaquin Valley (San Joaquin, Stanislaus and Merced counties) in the following table:

Pollutant	Potential Emissions Reduction per school bus		CY2002 Diesel School Bus Emissions in Northern SJV, tpy
	lb/yr	tpy	
VOC	32	0.02	14.6
CO	185	0.09	94.9
NOx	540	0.27	328.5
SOx	--	--	--
PM_{10}	22	0.01	14.6

The cost-effectiveness of this measure is estimated to be $289,844/ton of ozone precursors and $279,353/ton of PM_{10} precursors. The low-emitting school bus program administered by the CEC and local air districts has been highly successful in replacing

older Diesel school buses with newer, lower emitting buses in many areas of the state, although the direct emissions reductions achieved are minimal on a per unit basis.

Solar panels at Mountain House School

No emissions reductions have been quantified for this mitigation measure.

Renovation of Mountain House School parking lot

No emissions reductions can be quantified for this mitigation measure.

Ultra-low sulfur fuel for construction equipment

Emissions reductions from this proposed mitigation measure were calculated based on the CEC staff's assumption that the on-site construction equipment for the Mountain House construction project would have a total rated horsepower of 3890. This was then adjusted by a weighted average load factor of 58% to account for the fact that the equipment does not operate full time at full load. Construction operations were assumed to occur 8 hours per day, 300 days per year. The substitution of ultralow sulfur fuel for CARB low-sulfur Diesel fuel is expected to reduce only SO_2 and PM_{10} emissions; the applicant is not aware of any information regarding reductions in other emissions that would result solely from the use of this ultralow sulfur fuel.

The total benefits of this measure are estimated to be 3,804 lb/yr, or 1.90 tpy of SO_2 and 78 lb/yr, or 0.04 tpy, of PM_{10}. The cost-effectiveness of the measure is $45,765/ton for PM_{10} precursors. No benefits are expected for ozone precursors so no cost-effectiveness can be calculated for those pollutants.

Wood stove replacement

Emission reductions from wood stove replacements were evaluated using AP-42 emission factors and wood stove usage information from the BAAQMD and the ARB. The potential reductions were calculated as the difference between the emissions from existing uncertified wood stoves and the emissions from replacement gas stoves providing the same heat release. According to the BAAQMD, approximately 1.5 cords, or 3 tons, of wood are burned each year in a wood stove. A natural gas replacement would use 0.02 MMscf per year of natural gas to provide equivalent heating.

Calculations of the potential emissions reductions per 100 woodstove replacements are compared with the total emissions from woodstoves and fireplaces in Alameda and San Joaquin counties in the following table:

Pollutant	Potential Emissions Reduction per 100 wood stove replacements		Woodstove and Fireplace Emissions in the Project Area, tpy
	lb/yr	tpy	
VOC	15,889	7.94	472.80
CO	69,161	34.58	2,836.76
NOx	654	0.33	40.34
SOx	119	0.06	6.07
PM_{10}	9165	4.58	474.80

Assuming a $500 per replacement incentive payment, the cost-effectiveness for this measure is $6,045/ton of ozone precursors and $3,872/ton of PM_{10} precursors. A similar woodstove replacement program has been extremely successful in the BAAQMD and would be expected to be successful in the project area as well. An added benefit of this measure is that the emissions reductions are achieved during the winter months, when PM_{10} concentrations are generally highest.

Fireplace Retrofit

Emission reductions from fireplace retrofits were evaluated using AP-42 emission factors and fireplace usage information from the BAAQMD and the ARB. The potential reductions were calculated as the difference between the emissions from existing uncertified wood-burning fireplaces and the emissions from fireplaces utilizing natural gas inserts. According to the BAAQMD, approximately 0.3 cords, or 0.6 tons, of wood are burned each year in a fireplace. A natural gas retrofit would use 0.001 MMscf per year of natural gas to provide equivalent heating.

Calculations of the potential emissions reductions per 100 fireplace retrofits are compared with the total emissions from woodstoves and fireplaces in Alameda and San Joaquin counties in the following table:

Pollutant	Potential Emissions Reduction per 100 fireplace retrofits		Woodstove and Fireplace Emissions in the Project Area, tpy
	lb/yr	tpy	
VOC	6,870	3.43	472.80
CO	7,576	3.79	2,836.76
NOx	72	0.04	40.34
SOx	12	0.01	6.07
PM_{10}	1,038	0.52	474.80

Assuming a $300 per retrofit incentive payment, the cost-effectiveness for this measure is $8,643/ton of ozone precursors and $7,508/ton of PM_{10} precursors. As with woodstove replacements, this program has been successful in the Bay Area and provides PM_{10} reductions during the time of year that they are most needed.

Agricultural engine replacements

Emissions from existing agricultural engines were estimated using a weighted average equipment mix and the ARB/EPA nonroad models. Emissions from controlled units

were estimated using current or potentially applicable standards. Potential reductions from each engine retrofitted through the program and the total reduction potential (based on an estimated 1144 engines available for retrofit in the northern San Joaquin Valley) are shown in the table below.

Pollutant	Potential Emissions Reduction per engine retrofit		Potential Emissions Reductions in the northern SJV, tpy
	lb/yr	tpy	
VOC	37	0.02	234
CO	--	--	--
NOx	172	0.09	1,086
SOx	--	--	--
PM_{10}	53	0.03	332

The cost-effectiveness of this program is estimated to be $17,165/ton of ozone precursors and $13,717/ton of PM_{10} precursors. This program has been highly successful in the San Joaquin Valley, with an estimated 2,775 engines already retrofitted. The SJVUAPCD staff determines a specific incentive amount for each engine based on information provided by program applicants. The average incentive payment under the program to date is approximately $65 per engine horsepower.

Heavy-duty engine retrofit/replacements

Potential emission reductions from the retrofit or replacement of existing, high-emitting heavy-duty engines are estimated using data from the ARB and SJVUAPCD. The SJVUAPCD estimates that NOx can be reduced by 27% and PM_{10} by 31% through this incentive program.

The potential emissions reductions from heavy-duty engine retrofits or replacements are compared with the total emissions from heavy-duty engines in the northern region of the valley in the following table:

Pollutant	Potential Emissions Reductions, tpy	Heavy-Duty Engine Emissions in the northern San Joaquin Valley, tpy
VOC	--	6,033
CO	--	50,454
NOx	8,638	31,562
SOx	--	371
PM_{10}	424	1,372

The calculated cost-effectiveness for this measure is $20,867/ton of ozone precursors and $19,880/ton of PM_{10} precursors. This proposed measure would build upon an existing highly successful SJVUAPCD program.

Attachment 1

Detailed Calculations and Assumptions for Air Quality Mitigation Measures

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 1: Natural Gas Transit Buses

Assumptions and Calculations - Per Transit Bus

Parameter	Units	CEC Staff	EAEC	Comment
Bus travel distance (one way)	miles	15	15	no change to CEC staff assumption
Bus travel time (one way)	hours		0.75	assumed 45 minutes for complete route, including stops
Operating hours per day	hours	8	14	assume daily service from 6:00 am to 8:00 pm
Bus round trips/day	trips		8.0	includes time for driver lunch/rest breaks
Rush hour round trips/day	trips		4.0	based on 90 minute round trip time; 3 hours each during morning and afternoon commutes
Passengers/bus - rush hours	passengers		60	assumes 48 seated and 12 standees, commute direction
Passengers/bus - off-peak	passengers		12	assume 25% capacity factor for off-peak travel, each direction
Passengers/day - one way	passengers	600	384	CEC staff: 1200 passengers RT for 4 buses; EAEC: calculated from above assumptions
Avoided auto travel - one way	miles	15	15	no change to CEC staff assumption
Bus travel per day	miles/day		240	calculated from above assumptions
Avoided auto travel per day	miles/day	9,000	5,760	calculated from above assumptions
Operating days per year	days/year	240	240	no change to CEC staff assumption
Bus travel per year	miles/year		57,600	calculated from above assumptions
Avoided auto travel per year	miles/year	2,160,000	1,382,400	calculated from above assumptions
Bus Emission Factors				gm/bhp-hr factors adjusted to grams/mile using ARB MSERC factor of 4.1 bhp-hr/mile
VOC	grams/mile		5.33	1.3 gm/bhp-hr (1996+)
CO	grams/mile		63.55	15.5 gm/bhp-hr (1996+)
NOx	grams/mile		16.40	4.0 gm/bhp-hr (1996+ UB)
SOx	grams/mile		0.00	assumed negligible for natural gas buses
PM10	grams/mile		0.29	0.07 gm/bhp-hr, 4.1 bhp-hr/mile (ARB standard for urban buses; ARB MSERC factor)
Auto Emission Factors				
VOC	grams/mile	0.96	1.153	ARB model EMFAC2001 v 2.08, SJV Northern Region, CY2002, average of LDA and LDT1
CO	grams/mile		11.552	ARB model EMFAC2001 v 2.08, SJV Northern Region, CY2002, average of LDA and LDT1
NOx	grams/mile	0.81	1.038	ARB model EMFAC2001 v 2.08, SJV Northern Region, CY2002, average of LDA and LDT1
SOx	grams/mile		0.006	ARB model EMFAC2001 v 2.08, SJV Northern Region, CY2002, average of LDA and LDT1
Vehicle PM10	grams/mile	0.038	0.036	ARB model EMFAC2001 v 2.08, SJV Northern Region, CY2002, average of LDA and LDT1
Vehicle road dust PM10	grams/mile	0.700		
Avoided auto emissions				
VOC	lbs/yr	4,572	3,514	
CO	lbs/yr	-	35,207	
NOx	lbs/yr	3,857	3,163	
SOx	lbs/yr	-	18	
PM10	lbs/yr	3,514	110	EAEC calculations do not include vehicle road dust emissions.
New bus emissions				
VOC	lbs/yr	-	677	
CO	lbs/yr	-	8,070	
NOx	lbs/yr	-	2,083	
SOx	lbs/yr	-	-	
PM10	lbs/yr	-	36	
Net emission reductions				
VOC	lbs/yr	4,572	2,837	
CO	lbs/yr	-	27,137	
NOx	lbs/yr	3,857	1,081	
SOx	lbs/yr	-	18	
PM10	lbs/yr	3,514	73	
Net emission reductions				
VOC	tons/year	2.29	1.42	
CO	tons/year	-	13.57	
NOx	tons/year	1.93	0.54	
SOx	tons/year	-	0.01	
PM10	tons/year	1.76	0.04	
Cost per bus		$200,000	$200,000	no change to CEC assumptions
Cost/effectiveness				
Ozone precursors	$/ton	$ 47,457	$ 102,091	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	$ 33,492	$ 99,760	cost divided by net VOC+NOx+SOx+PM10 reductions

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 2: Natural Gas Refueling Facility

Assumptions and Calculations - Per Refueling Facility

Parameter	Units	CEC Staff	EAEC	Comment
Net emission reductions				No additional emission benefits
VOC	lbs/yr	-	-	
CO	lbs/yr	-	-	
NOx	lbs/yr	-	-	
SOx	lbs/yr	-	-	
PM10	lbs/yr	-	-	
Net emission reductions				
VOC	tons/year	-	-	
CO	tons/year	-	-	
NOx	tons/year	-	-	
SOx	tons/year	-	-	
PM10	tons/year	-	-	
Cost per bus		$250,000	$250,000	no change to CEC assumptions
Cost/effectiveness				
Ozone precursors	$/ton	NA	NA	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	NA	NA	cost divided by net VOC+NOx+SOx+PM10 reductions

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measures 3 and 4: Natural Gas School Buses

Assumptions and Calculations - Per School Bus

Parameter	Units	CEC Staff	EAEC	Comment
Bus travel distance (one way)	miles	30	30	no change to CEC staff assumption
Bus travel per day	miles/day	120	120	calculated from above assumptions
Operating days per year	days/year	200	200	no change to CEC staff assumption
Bus travel per year	miles/year	24,000	24,000	calculated from above assumptions
Current Bus Emission Factors				
VOC	grams/mile	1.47	0.70	EMFAC2001 v2.07, Northern Region, SJ Valley, Diesel school buses, CY2002 fleet avg
CO	grams/mile		4.54	EMFAC2001 v2.07, Northern Region, SJ Valley, Diesel school buses, CY2002 fleet avg
NOx	grams/mile	25.01	15.70	EMFAC2001 v2.07, Northern Region, SJ Valley, Diesel school buses, CY2002 fleet avg
SOx	grams/mile			EMFAC2001 v2.07, Northern Region, SJ Valley, Diesel school buses, CY2002 fleet avg
PM10	grams/mile	0.49	0.70	EMFAC2001 v2.07, Northern Region, SJ Valley, Diesel school buses, CY2002 fleet avg
Replacement Bus Emission Factors				
VOC	grams/mile	0.74	0.09	EMFAC2001 v 2.08, MY 2003 Diesel school bus emission factors
CO	grams/mile		1.04	EMFAC2001 v 2.08, MY 2003 Diesel school bus emission factors
NOx	grams/mile	8.75	5.48	EMFAC2001 v 2.08, MY 2003 Diesel school bus emission factors
SOx	grams/mile			
Vehicle PM10	grams/mile	0.02	0.29	EMFAC2001 v 2.08, MY 2003 Diesel school bus emission factors
Vehicle road dust PM10	grams/mile			
Reduced school bus emissions				
VOC	lbs/yr/bus	39	32	EAEC estimates based on clean Diesel replacements expected
CO	lbs/yr/bus	-	185	EAEC estimates based on clean Diesel replacements expected
NOx	lbs/yr/bus	860	540	EAEC estimates based on clean Diesel replacements expected
SOx	lbs/yr/bus	-	-	EAEC estimates based on clean Diesel replacements expected
PM10	lbs/yr/bus	25	22	EAEC estimates based on clean Diesel replacements expected
Reduced school bus emissions				
VOC	tons/year/bus	0.02	0.02	
CO	tons/year/bus	-	0.09	
NOx	tons/year/bus	0.43	0.27	
SOx	tons/year/bus	-	-	
PM10	tons/year/bus	0.01	0.01	
Cost per bus		$150,000	$83,000	incentive payment recommended by BAAQMD for LECEF school bus program
Annual Replacement Costs	$/year	$50,000		
Capitalized Replacement Cost		$380,304		capitalized based on $50,000/year, 15 years, NPV of 10%
Total Capitalized Cost		$530,304	$83,000	
Cost/effectiveness				
Ozone precursors	$/ton	$ 1,179,710	$ 289,844	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	$ 1,148,253	$ 279,353	cost divided by net VOC+NOx+SOx+PM10 reductions

Inventory Estimates

	San Joaquin	Stanislaus	Merced	Total
No. of Diesel School Buses	536	285	275	1096
Diesel School Bus Emissions				
VOC (tons/year)	7.30	3.65	3.65	14.60
CO (tons/year)	43.80	21.90	29.20	94.90
NOx (tons/year)	156.95	76.65	94.90	328.50
SOx (tons/year)	0.00	0.00	0.00	0.00
PM10 (tons/year)	7.30	3.65	3.65	14.60

Notes for inventory estimates: ARB model EMFAC2001 v 2.07, SJV Northern Region, CY2002, Diesel school buses
Values shown as zero above were reported by ARB as <0.01 tons/day.

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 5: Solar Panels at Mountain House School

Assumptions and Calculations

Parameter	Units	CEC Staff	EAEC	Comment
Net emission reductions				No additional emission benefits
VOC	lbs/yr	-	-	
CO	lbs/yr	-	-	
NOx	lbs/yr	-	-	
SOx	lbs/yr	-	-	
PM10	lbs/yr	-	-	
Net emission reductions				
VOC	tons/year	-	-	
CO	tons/year	-	-	
NOx	tons/year	-	-	
SOx	tons/year	-	-	
PM10	tons/year	-	-	
Cost per bus		$25,000	$25,000	no change to CEC assumptions
Cost/effectiveness				
Ozone precursors	$/ton	NA	NA	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	NA	NA	cost divided by net VOC+NOx+SOx+PM10 reductions

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 6: Mountain House School Parking Lot Renovation

Assumptions and Calculations

Parameter	Units	CEC Staff	EAEC	Comment
Net emission reductions				No additional emission benefits
VOC	lbs/yr	-	-	
CO	lbs/yr	-	-	
NOx	lbs/yr	-	-	
SOx	lbs/yr	-	-	
PM10	lbs/yr	-	-	
Net emission reductions				
VOC	tons/year	-	-	
CO	tons/year	-	-	
NOx	tons/year	-	-	
SOx	tons/year	-	-	
PM10	tons/year	-	-	
Cost per bus		$30,000	$30,000	no change to CEC assumptions
Cost/effectiveness				
Ozone precursors	$/ton	NA	NA	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	NA	NA	cost divided by net VOC+NOx+SOx+PM10 reductions

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 7: Ultra-Low Sulfur Diesel Fuel for Mountain House Construction Equipment

Assumptions and Calculations

Parameter	Units	CEC Staff	EAEC	Comment
Total on-site equipment hp	rated hp	3890	3890	no change to CEC staff assumption
Average load factor	%		58%	CEC staff assumed 100% load at all times; EAEC estimate is weighted average
Operating hours per day	hrs/day	8	8	no change to CEC staff assumption
Operating days per year	days/year	300	300	no change to CEC staff assumption
Annual equipment usage	hp-hr/year	9,336,000	5,391,342	calculated from above assumptions
BSFC	lbs/hp-hr		0.43	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
Annual fuel consumption	gal/year		326,160	calculated based on 0.4 lbs fuel/bhp-hr, 7.05 lbs/gallon
Current Equipment Emission Factors				
VOC	gms/bhp-hr		0.66	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
CO	gms/bhp-hr		3.37	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
NOx	gms/bhp-hr	9.60	7.18	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
SOx	gms/bhp-hr		0.33	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
PM10	gms/bhp-hr	1.00	0.46	EAEC values from ARB/EPA NonRoad models, weighted average for CEC eqpt mix
UltraLow Sulfur Fuel Emissions				Note: CEC assumptions are based on lower emitting engines and soot filters, not ULSF.
VOC	gms/bhp-hr		0.66	no change due to ULSF use
CO	gms/bhp-hr		3.37	no change due to ULSF use
NOx	gms/bhp-hr	6.90	7.18	
SOx	gms/bhp-hr		0.01	reduced by ratio of 7 ppm S to 334 ppm S (EPA rulemaking support for 15 ppm S)
PM10	gms/bhp-hr	0.10	0.46	reduced by 2% of baseline SOx emission rate (EPA rulemaking support for 15 ppm S)
Reduced Construction Equipment Emissions				
VOC	lbs/yr	-	-	
CO	lbs/yr	-	-	
NOx	lbs/yr	55,573	-	
SOx	lbs/yr	-	3,804	
PM10	lbs/yr	18,524	78	
Reduced Construction Equipment Emissions				
VOC	tons/year	-	-	
CO	tons/year	-	-	
NOx	tons/year	27.79	-	
SOx	tons/year	-	1.90	
PM10	tons/year	9.26	0.04	
Cost		$250,000	$0	EAEC believes no unique ULSF infrastructure is necessary.
Annual Fuel Subsidy Costs	$/year	$0	$9,785	EAEC calculation based on $0.03/gallon price differential for ULSF.
Capitalized Fuel Subsidy Costs		$0	$88,817	capitalized based on 25 years, NPV of 10%
Total Capitalized Cost		$250,000	$88,817	
Cost/effectiveness				
Ozone precursors	$/ton	$ 8,997	NA	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	$ 6,748	$ 45,765	cost divided by net VOC+NOx+SOx+PM10 reductions

Note: EAEC does not believe that CEC-estimated reductions (based on the use of new construction equipment engines and oxidizing soot filters) can be achieved for the $250,000 cost estimated by the CEC staff.

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 7: Ultra-Low Sulfur Diesel Fuel for Mountain House Construction Equipment - Additional Supporting Details

Type of Vehicle	No.	Rated HP	BSFC lbs/bhp-hr	Rated Fuel gal/hr	Load Factor	Estimated Fuel gal/hr	EPA NonRoad Category	EPA NonRoad Fuel gal/yr	EPA NonRoad NMOG tons/yr	EPA NonRoad CO tons/yr	EPA NonRoad NOx tons/yr	EPA NonRoad SOx tons/yr	EPA NonRoad PM10 tons/yr
Delivery/dump trucks	5	400	0.41	23.26	57%	13.26	Off-Highway Trucks	74,495,622	574.93	3,811.95	10,249.66	452.81	453.03
Earthmovers	3	300	0.41	17.45	61%	10.64	Scrapers	39,718,697	293.42	1,698.99	5,152.73	191.14	234.19
Bulldozers	2	250	0.47	16.67	57%	9.50	Rubber Tire Tractor/Dozers	5,123,780	43.01	232.27	703.63	30.08	32.91
Backhoes	2	120	0.49	8.34	55%	4.59	Tractors/Loaders/Backhoes	128,914,999	2,774.78	11,421.19	15,372.63	809.01	1,779.18
Water Truck	1	250	0.47	16.67	57%	9.50	Off-Highway Trucks	74,495,622	574.93	3,811.95	10,249.66	452.81	453.03
Totals	13	3890	0.43	235.33	58%	135.90		834,207,381	9,965.42	51,275.59	109,108.67	4,968.46	7,044.93

BSFC from ARB NonRoad model
Load factors from ARB NonRoad model

	EPA NonRoad NMOG lbs/Mgal	EPA NonRoad CO lbs/Mgal	EPA NonRoad NOx lbs/Mgal	EPA NonRoad SOx lbs/Mgal	EPA NonRoad PM10 lbs/Mgal
Delivery/dump trucks	15.44	102.34	275.17	12.16	12.16
Earthmovers	14.77	85.55	259.46	9.62	11.79
Bulldozers	16.79	90.66	274.65	11.74	12.85
Backhoes	43.05	177.19	238.49	12.55	27.60
Water Truck	15.44	102.34	275.17	12.16	12.16
Averages	23.89	122.93	261.59	11.91	16.89

	EPA NonRoad NMOG gm/bhp-hr	EPA NonRoad CO gm/bhp-hr	EPA NonRoad NOx gm/bhp-hr	EPA NonRoad SOx gm/bhp-hr	EPA NonRoad PM10 gm/bhp-hr
Delivery/dump trucks	0.41	2.70	7.26	0.32	0.32
Earthmovers	0.39	2.26	6.84	0.25	0.31
Bulldozers	0.51	2.74	8.31	0.36	0.39
Backhoes	1.36	5.59	7.52	0.40	0.87
Water Truck	0.47	3.09	8.32	0.37	0.37
Averages	0.66	3.37	7.18	0.33	0.46

East Altamont Energy Center
Air Quality Mitigation Measures

CEC Measure 8: Wood Stove Replacement Program

Assumptions and Calculations - per 100 wood stoves

Parameter	Units	CEC Staff	EAEC	Comment
Number of wood stoves		100	100	scaling factor
Annual wood usage	cords/year/unit	1.50	1.50	based on BAAQMD estimate
Annual wood usage	lbs/year/unit	4,630	6,000	CEC estimate based on 1400 kg/cord; EAEC estimate based on 4000 lb/cord (ARB)
Heat content of wood	MMbtu/cord		20	ARB area source guidance, Table 1 for Alameda and San Joaquin Counties
Assumed wood stove efficiency	%		54%	AP-42, Table 1.10-5 (10/96), conventional wood stoves
Assumed gas stove efficiency	%		80%	
Annual wood heat release	MMbtu/yr/unit		16.2	calculated from above values
Assumed gas heating value	btu/scf		1,021	EAEC AFC assumption
Annual gas consumption	MMscf/yr/unit		0.020	calculated from above values
Conventional Wood Stove Emission Factors				
VOC	lbs/ton	53.0	53.0	AP-42, Table 1.10-1; conventional wood stoves, pre-Phase I
CO	lbs/ton		230.8	AP-42, Table 1.10-1; conventional wood stoves, pre-Phase I
NOx	lbs/ton		2.8	AP-42, Table 1.10-1; conventional wood stoves, pre-Phase I
SOx	lbs/ton		0.4	AP-42, Table 1.10-1; conventional wood stoves, pre-Phase I
PM10	lbs/ton	30.6	30.6	AP-42, Table 1.10-1; conventional wood stoves, pre-Phase I
Controlled Emission Factors				CEC estimates based on AP-42, Table 1.10-1 for noncatalytic, Phase II certified stoves
		Wood	Gas	EAEC estimates based on gas replacement units per BAAQMD recommendation
		lbs/ton	lbs/MMscf	Gas emission factors from AP-42, Section 1.4 (7/98)
VOC		12.00	5.50	
CO			40.00	
NOx			94.00	
SOx			0.60	
PM10		14.60	7.60	
Baseline Wood Stove Emissions				
VOC	lbs/yr	12,269	15,900	
CO	lbs/yr	-	69,240	
NOx	lbs/yr	-	840	
SOx	lbs/yr	-	120	
PM10	lbs/yr	7,083	9,180	
Controlled Emissions				
VOC	lbs/yr	2,778	11	
CO	lbs/yr	-	79	
NOx	lbs/yr	-	186	
SOx	lbs/yr	-	1	
PM10	lbs/yr	3,380	15	
Reduced Wood Stove Emissions				
VOC	lbs/yr	9,491	15,889	
CO	lbs/yr	-	69,161	
NOx	lbs/yr	-	654	
SOx	lbs/yr	-	119	
PM10	lbs/yr	3,704	9,165	
Reduced Wood Stove Emissions				
VOC	tons/year	4.75	7.94	
CO	tons/year	-	34.58	
NOx	tons/year	-	0.33	
SOx	tons/year	-	0.06	
PM10	tons/year	1.85	4.58	
Cost per wood stove retrofit	$/unit	$1,250	$500	EAEC estimate based on BAAQMD recommendation for LECEF mitigation program
Total Capital Cost		$125,000	$50,000	
Cost/effectiveness				
Ozone precursors	$/ton	$ 26,341	$ 6,045	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	$ 18,947	$ 3,872	cost divided by net VOC+NOx+SOx+PM10 reductions
		Alameda	San Joaquin	
Estimated annual wood use	tons/year	12,973	17,711	ARB area source guidance, Table II; includes wood stoves and fireplaces
Estimated number of units		4,324	5,904	back-calculated based on wood use

East Altamont Energy Center
Air Quality Mitigation Measures

EAEC Measure 1: Fireplace Insert Retrofit Program

Assumptions and Calculations - per 100 fireplaces

Parameter	Units		EAEC	Comment
Number of fireplaces			100	scaling factor
Annual wood usage	cords/year/unit		0.15	based on BAAQMD estimate
Annual wood usage	lbs/year/unit		600	Based on 4000 lb/cord (ARB)
Heat content of wood	MMbtu/cord		20	ARB area source guidance, Table 1 for Alameda and San Joaquin Counties
Assumed fireplace efficiency	%		15%	AP-42, Section 10.1 technical support document; range is between 7% and 42%
Assumed gas insert efficiency	%		75%	AP-42, Section 10.1 technical support document
Annual wood heat release	MMbtu/yr/unit		0.5	calculated from above values
Assumed gas heating value	btu/scf		1,021	EAEC AFC assumption
Annual gas consumption	MMscf/yr/unit		0.001	calculated from above values
Conventional Wood Fireplace Emission Factors				
VOC	lbs/ton		229.0	AP-42, Table 1.9-1 (10/96)
CO	lbs/ton		252.6	AP-42, Table 1.9-1 (10/96)
NOx	lbs/ton		2.6	AP-42, Table 1.9-1 (10/96)
SOx	lbs/ton		0.4	AP-42, Table 1.9-1 (10/96)
PM10	lbs/ton		34.6	AP-42, Table 1.9-1 (10/96)
Controlled Emission Factors				
			Gas	EAEC estimates based on gas replacement units per BAAQMD recommendation
			lbs/MMscf	Gas emission factors from AP-42, Section 1.4 (7/98)
VOC			5.50	
CO			40.00	
NOx			94.00	
SOx			0.60	
PM10			7.60	
Baseline Fireplace Emissions				
VOC	lbs/yr	-	6,870	
CO	lbs/yr	-	7,578	
NOx	lbs/yr	-	78	
SOx	lbs/yr	-	12	
PM10	lbs/yr	-	1,038	
Controlled Emissions				
VOC	lbs/yr	-	0	
CO	lbs/yr	-	2	
NOx	lbs/yr	-	6	
SOx	lbs/yr	-	0	
PM10	lbs/yr	-	0	
Reduced Fireplace Emissions				
VOC	lbs/yr	-	6,870	
CO	lbs/yr	-	7,576	
NOx	lbs/yr	-	72	
SOx	lbs/yr	-	12	
PM10	lbs/yr	-	1,038	
Reduced Fireplace Emissions				
VOC	tons/year	-	3.43	
CO	tons/year	-	3.79	
NOx	tons/year	-	0.04	
SOx	tons/year	-	0.01	
PM10	tons/year	-	0.52	
Cost per fireplace retrofit	$/unit		$300	EAEC estimate based on BAAQMD recommendation for LECEF mitigation program
Total Capital Cost			$30,000	
Cost/effectiveness				
Ozone precursors	$/ton		$ 8,643	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton		$ 7,508	cost divided by net VOC+NOx+SOx+PM10 reductions
		Alameda	San Joaquin	
Estimated annual wood use	tons/year	12,973	17,711	ARB area source guidance, Table II; includes wood stoves and fireplaces
Estimated annual wood emissions				
TOG	tons/year	198.29	274.51	ARB area source guidance, Table II; includes wood stoves and fireplaces

East Altamont Energy Center
Air Quality Mitigation Measures

SJVUAPCD Measure 1: Ag Engine Retrofits

Assumptions and Calculations

Parameter	Units	Value	Comment
Number of engines retrofit to date	engines	2775	SJVUAPCD data
Average load factor	%	65%	from ARB NonRoad model
Annual fuel consumption	gal/year/engine	31,596	Back-calculated based on SJVUAPCD usage estimate and ARB NonRoad bsfc
Annual equipment usage	hp-hr/year/engine	412,500	SJVUAPCD data
Current Equipment Emission Factors			
VOC	gms/bhp-hr	1.45	Values from ARB/EPA NonRoad models, weighted average eqpt mix
CO	gms/bhp-hr	5.58	Values from ARB/EPA NonRoad models, weighted average eqpt mix
NOx	gms/bhp-hr	8.99	Values from ARB/EPA NonRoad models, weighted average eqpt mix
SOx	gms/bhp-hr	0.37	Values from ARB/EPA NonRoad models, weighted average eqpt mix
PM10	gms/bhp-hr	0.80	Values from ARB/EPA NonRoad models, weighted average eqpt mix
Controlled Equipment Emissions			
VOC	gms/bhp-hr	1.00	California/Federal Non-Road Equipment Emission Standard
CO	gms/bhp-hr	5.58	Applicable standard is not a constraint on emissions; assume no change
NOx	gms/bhp-hr	6.90	Highest potentially applicable standard
SOx	gms/bhp-hr	0.37	No applicable standard, assume no change.
PM10	gms/bhp-hr	0.16	California Non-Road standard for engines <= 750 bhp
Reduced Equipment Emissions			
VOC	lbs/yr/engine	409	
CO	lbs/yr/engine	-	
NOx	lbs/yr/engine	1,898	
SOx	lbs/yr/engine	-	
PM10	lbs/yr/engine	580	
Reduced Equipment Emissions			
VOC	tons/year/engine	0.20	
CO	tons/year/engine	-	
NOx	tons/year/engine	0.95	
SOx	tons/year/engine	-	
PM10	tons/year/engine	0.29	
Cost		$19,803	Back-calculated based on SJVUAPCD estimate of $4173.33/ton of NOx, 5 yr reduction
Total Capitalized Cost		$19,803	
Cost/effectiveness			
Ozone precursors	$/ton	$ 17,165	cost divided by net VOC+NOx reductions
PM10 precursors	$/ton	$ 13,717	cost divided by net VOC+NOx+SOx+PM10 reductions

Historical Program Information

	NOx	PM10	
Reductions to date	2,763	222	tons/year, SJVUAPCD data

Emission Reduction Potential	Northern Region	SJ Valley	
Engines	1144	3200	
VOC	234	655	tons/year
CO	-	-	tons/year
NOx	1,086	3,037	tons/year
SOx	-	-	tons/year
PM10	332	928	tons/year

Ag Pump Engine Emissions			2001 ARB Emissions Inventory Data
	Northern Region	SJ Valley	
VOC	1,161	3,241	tons/year
CO	7,895	22,002	tons/year
NOx	8,479	23,692	tons/year
SOx	1,110	3,103	tons/year
PM10	551	1,544	tons/year

East Altamont Energy Center
Air Quality Mitigation Measures

SJVUAPCD Measure 1: Ag Engine Retrofits - Additional Supporting Details

Type of Vehicle	No.	Rated HP	BSFC lbs/bhp-hr	Rated Fuel gal/hr	Load Factor	Estimated Fuel gal/hr
Irrigation Pumps	556	37	0.54	2.83	65%	1.84
Irrigation Pumps	2805	93	0.54	7.12	65%	4.63
Irrigation Pumps	392	151	0.54	11.57	65%	7.52
Irrigation Pumps	7	333	0.54	25.51	65%	16.58
	3760	91	0.54	6.99	65%	4.54

Note: above data from ARB NonRoad model

	EPA NonRoad Category	EPA NonRoad Fuel gal/yr	EPA NonRoad NMOG tons/yr	EPA NonRoad CO tons/yr	EPA NonRoad NOx tons/yr	EPA NonRoad SOx tons/yr	EPA NonRoad PM10 tons/yr
	Irrigation Sets	3,606,874	75.27	289.89	466.50	19.16	41.41
			EPA NMOG lbs/Mgal	EPA CO lbs/Mgal	EPA NOx lbs/Mgal	EPA SOx lbs/Mgal	EPA PM10 lbs/Mgal
	Irrigation Pumps		41.74	160.74	258.67	10.62	22.96
			EPA NonRoad NMOG gm/bhp-hr	EPA NonRoad CO gm/bhp-hr	EPA NonRoad NOx gm/bhp-hr	EPA NonRoad SOx gm/bhp-hr	EPA NonRoad PM10 gm/bhp-hr
	Irrigation Pumps		1.45	5.58	8.99	0.37	0.80

East Altamont Energy Center
Air Quality Mitigation Measures

SJVUAPCD Measure 2: Heavy Duty Engine Retrofits (except ag pump engines)

Assumptions and Calculations

Parameter	Units	Value	Comment
Current Engine Emission Factors			
VOC	gms/bhp-hr		
CO	gms/bhp-hr		
NOx	gms/bhp-hr	9.50	SJVUAPCD data
SOx	gms/bhp-hr		
PM10	gms/bhp-hr	0.55	SJVUAPCD data
Controlled Engine Emission Factors			
VOC	gms/bhp-hr		
CO	gms/bhp-hr		
NOx	gms/bhp-hr	6.90	SJVUAPCD data
SOx	gms/bhp-hr		
PM10	gms/bhp-hr	0.38	SJVUAPCD data
Reduced Equipment Emissions			
VOC			
CO			
NOx	%	27%	
SOx			
PM10	%	31%	

Heavy-Duty Engine Emissions	Northern Region	SJ Valley	
VOC	6,033	16,421	2001 ARB Emissions Inventory Data, tons/year
CO	50,454	136,244	2001 ARB Emissions Inventory Data, tons/year
NOx	31,562	85,045	2001 ARB Emissions Inventory Data, tons/year
SOx	371	5,668	2001 ARB Emissions Inventory Data, tons/year
PM10	1,372	3,738	2001 ARB Emissions Inventory Data, tons/year
Potential Reductions Achievable			
VOC			#
CO			#
NOx	8,638	23,275	#
SOx			#
PM10	424	1,155	#

Cost/effectiveness			
Ozone precursors	$/ton	$ 20,867	SJVUAPCD data
PM10 precursors	$/ton	$ 19,880	SJVUAPCD data

Attachment 2

Proposed Condition of Certification

East Altamont Energy Center
Proposed Condition of Certification – Air Quality Mitigation Program

AQ-nn In order to enhance air quality in the northern San Joaquin Valley Air Basin in general, and in the vicinity of the project in particular, the project owner shall fund a program designed to achieve reductions in emissions of ozone and PM_{10} precursors. These emission reductions may be generated through a combination of mobile and/or stationary source emission reduction programs. This condition is agreed to in order to address concerns raised by the public, the CEC staff, and the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), and is not imposed to mitigate a significant impact under CEQA.

Emission reductions will be obtained through implementation of measures identified in the Air Quality Mitigation Measure Plan for the East Altamont Energy Center. Prior to the commencement of construction, the project owner shall pay to the SJVUAPCD the sum of $nnnn, which funds shall be deposited by the SJVUAPCD into an account dedicated to the implementation of emission reduction measures designed to mitigate the impacts of the EAEC project within the San Joaquin Valley Air Basin. The SJVUAPCD shall expend the funds in a manner designed to maximize the emission reductions achieved through such expenditures, and shall give preference to cost-effective measures which reduce emissions in or near the city of Tracy, San Joaquin County, and the Northern Region of the San Joaquin Valley Air Basin.

Verification: At least 10 days prior to the commencement of construction, the project owner shall submit to the CPM evidence of payment to the SJVUAPCD. Not more than 60 days after the end of each calendar year, commencing with the calendar year in which the mitigation payment is made, EAEC shall, with the support of SJVUAPCD, submit to the CPM a report containing the following information:

- List of all projects funded through the EAEC air quality mitigation program during the prior calendar year
- Incentive payments and/or costs for each project funded during the prior calendar year
- Estimated annual emission reductions for each project funded during the prior calendar year
- Estimated cumulative annual emission reductions for all projects funded through the end of the prior calendar year

Such reports shall continue to be filed at the end of each calendar year, with the last report due after the end of the calendar year in which the last of the available mitigation funds have been expended.

At any time during the implementation of this program, the SJVUAPCD may request that the CPM approve expenditures for measures not included in the original Air Quality Mitigation Measure Plan for the East Altamont Energy Center submitted pursuant to this condition. Such request shall be accompanied by a description of the additional emission reduction measures and their anticipated costs and emission reductions, with a level of detail comparable to that contained in the original Air Quality Mitigation Measure Plan for the East Altamont Energy Center submitted pursuant to this condition.